

A new species of *Conostylis* (Haemodoraceae) from the Wongan Hills district, Western Australia

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Abstract

Hopper, Stephen D. A new species of *Conostylis* (Haemodoraceae) from the Wongan Hills district, Western Australia. Nuytsia 4(1): 17-21 (1982). *Conostylis wonganensis* Hopper is described and illustrated. It is a rare endemic of the Wongan Hills district allied to *C. teretiuscula* F. Muell., *C. dielsii* W. V. Fitzg. and *C. caricina* Lindl.

Introduction

The Wongan Hills contain one of the few moderately large vestiges of uncleared land in the central wheatbelt of Western Australia. They have outstanding conservation values (Kenneally, 1977; Rye, 1980), but are potentially threatened by mining and agricultural activities.

The following rare *Conostylis* is described as an addition to several accompanying papers in this issue of Nuytsia that name plants endemic to the Wongan Hills district.

Conostylis wonganensis Hopper, sp. nov. (Figure 1)

Differt a *C. teretiuscula* F. Muell. foliis glabris praeter spinos parvos marginis dense pubescentes, ovula pauca in quoque loculo marginem inferiorem placentae affixa, Differt a *C. dielsii* W. V. Fitzg. foliorum basibus glabris, caulibus florentibus foliis minus quam triplo brevioribus.

Differs from *C. teretiuscula* F. Muell. in the leaves being glabrous except for small densely pubescent marginal spines and in the few ovules per locule that are attached on the lower side of the placenta. Differs from *C. dielsii* W. V. Fitzg. in the glabrous leaf bases and in the flowering stems less than a third the length of the leaves.

Typus: 4.4 km NW of Wongan Hills town on road to Piawaning, 23 August 1976, S. D. Hopper 427 per D. Coates (holo: PERTH; iso: AD, CANB, NSW).

Perennial herb, caespitose, small (to 20 cm tall by 10 cm basal diameter); rhizome and stems short, bearing numerous crowded leaves and wiry roots 30 cm or more long. *Leaves* to 17 cm long and 0.9 mm in diameter, erect, thin, terete, sulcate, pale green except for their yellow-brown equitant bases, glabrous except for small densely pubescent spines evenly spaced along the margins. *Scape* tomentose, 1-3 cm high, less than a third the length of the leaves, 0.5-1.0 mm in diameter, bearing less than

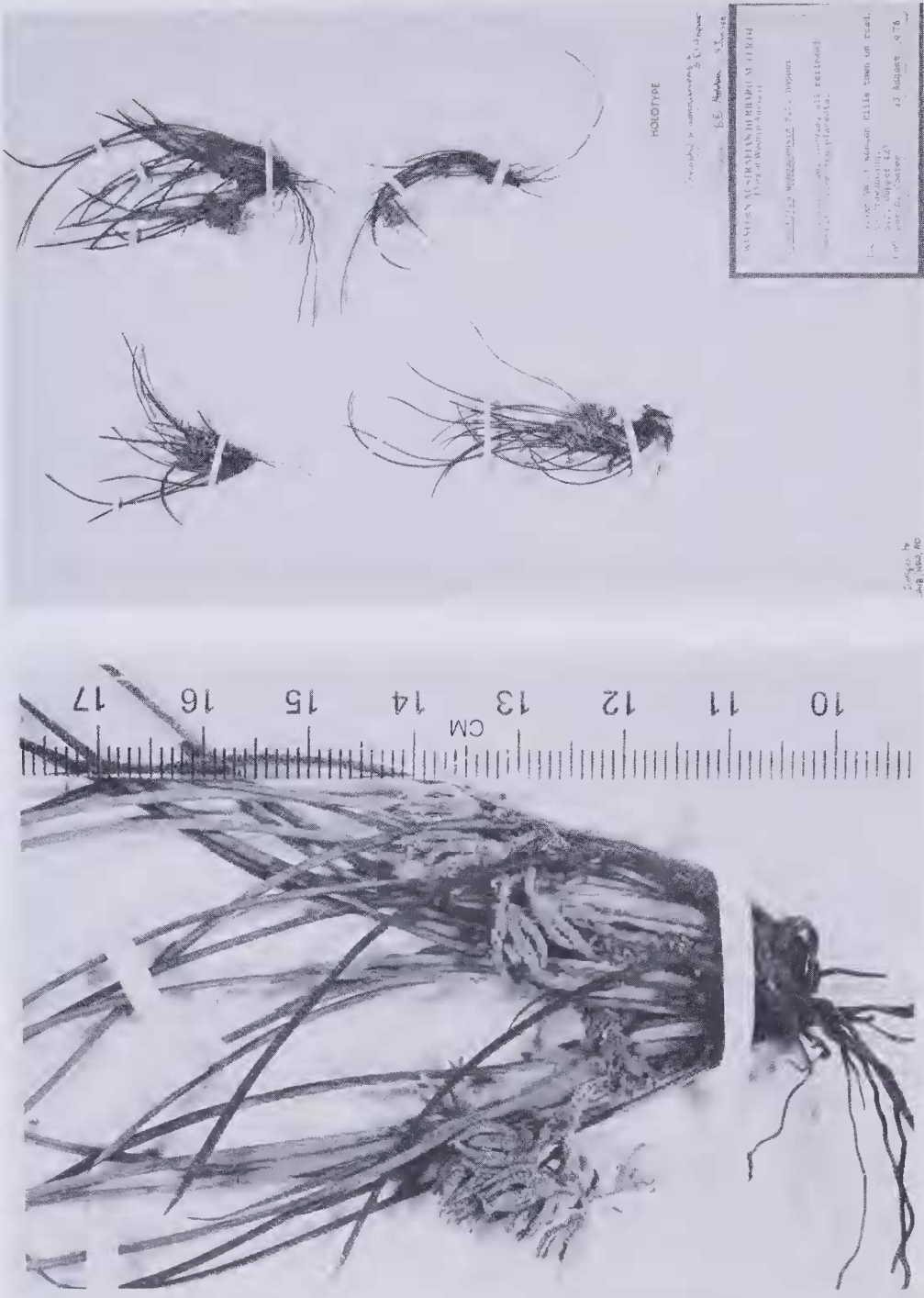


Figure 1. *Conostylis wonganensis*. Top—holotype sheet (S. D. Hopper 427 per D. Coates). Bottom—enlargement of upper right hand specimen on the holotype sheet.

10 flowers. *Flowers* creamy yellow, densely tomentose on all surfaces; *perianth* (5-)6(-8) mm long; *perianth lobes* (3-)4.4(-6) mm long, 1.4-2.1 mm broad at the base and splayed at right angles to the tube when fresh; *stamens* uniseriate, inserted 0.6-1.6 mm above the ovary on the perianth wall, filaments 0.5-0.9 mm long, anthers 1.8-3.2 mm long; *style* 3.3-6.9 mm long, the trilobate stigma held 2-3 mm above the anthers; *placenta* with up to 5 ovules per locule, ovules all attached on the lower placental surface. *Seeds* not seen.

Distribution. The south-west of Western Australia; known only from near Wongan Hills and Manmanning.

Habitat. Occurs as scattered plants in species-rich heath with emergent *Eucalyptus pyriformis* mallees and favouring yellow sand over clay or laterite on gradual slopes high in the landscape.

Flowering season. Commences late July, peaks in August and finishes in early September.

Other specimens examined (all housed at PERTH). WESTERN AUSTRALIA: Wongan Hills, July 1963, Y. Chadwick 399; 4.2 km (2.6 mi) NW of Wongan Hills towards Piawaning, 30°52'S, 116°41'E, 27 August 1976, R. Coveny 7808 and B. R. Maslin (duplicate ex NSW); Smith's farm \pm 2 km SW of Manmanning, 31 August 1976, A. S. George s.n.; about 3 km NW of Wongan Hills township along road to Piawaning, 29 May 1978, S. D. Hopper 893; 3.6 km NW of Wongan Hills along road to Piawaning, 30°52'S, 116°41'E, 1 September 1978, S. D. Hopper 1108.

Etymology. The species is named after the Wongan Hills district to which it is endemic. It has the most restricted geographical distribution of any named *Conostylis*. Hence a geographical reference in the specific epithet seems appropriate.

The affinities of this species are with *Conostylis teretiuscula* F. Muell., *C. dielsii* W. V. Fitzg. and *C. caricina* Lindl. (cf Green 1961). The four species now recognised in this group all have distinctive creamy-yellow or cream flowers. Qualitative and quantitative differences between these species are given in Table 1. The terete leaves with glabrous bases and very small pubescent spines scattered along the margins are diagnostic features of *C. wonganensis* easiest to perceive. It also has flowers that are noticeably smaller than those of its relatives.

The oldest known specimen of *C. wonganensis* was collected by Y. Chadwick in July 1963. The species was not collected again until 1976, when specimens were obtained in the same month independently by D. J. Coates (23 August—holotype), R. Coveny and B. R. Maslin (27 August), and A. S. George (31 August). The distribution represented by these collections has not been extended subsequently, despite fairly intensive field work in the area undertaken by the author since 1978. Further surveys for *C. wonganensis* are needed before a sound understanding of its conservation status is at hand, but it seems probable that the species is, indeed, a very rare endemic of the Wongan Hills-Manmanning area. One of the known populations extends partly into a Nature Reserve, while the other occurs in uncleared tall heath surrounding a farm house on private land.

TABLE 1. A comparison of qualitative and quantitative character differences between *Conostylis wonganensis* and related species.

Character*	<i>C. wonganensis</i>	<i>C. teretiuscula</i>	<i>C. dielsii</i>	<i>C. caricina</i>
1. Ovule position	lower placenta	lower and lateral placenta	lower placenta	entire placenta
2. No. ovules/locule	5	15-20	5	20
3. Leaf shape	terete	terete, occasionally flat	flat-terete	flat
4. Leaf bases	glabrous	glabrous	densely tomentose	glabrous
5. Leaf indumentum	minute pubescent marginal spines	densely to sparsely tomentose with elongate hairs	sparsely tomentose with elongate hairs	glabrous
6. Maximum leaf length (mm) mean \pm SE (N) range	112.5 \pm 12.3 (8) 75-140	17.9 \pm 14.8 (20) 98-380	114.2 \pm 5.9 (16) 72-155	158.2 \pm 8.5 (20) 76-215
7. Leaf width (mm) mean \pm SE (N) range	0.7 \pm 0.04 (8) 0.6-0.9	1.0 \pm 0.06 (20) 0.5-1.6	1.2 \pm 0.7 (16) 0.8-1.8	2.5 \pm 0.2 (20) 0.9-5.3
8. Leaf thickness (mm) mean \pm SE (N) range	0.6 \pm 0.03 (8) 0.5-0.7	0.6 \pm 0.04 (20) 0.3-0.9	0.4 \pm 0.03 (16) 0.2-0.7	0.9 \pm 0.1 (13) 0.4-1.2
9. Stem length (mm) mean \pm SE (N) range	11.3 \pm 2.0 (8) 6-25	56.9 \pm 4.3 (20) 28-98	69.0 \pm 5.9 (16) 22-103	50.5 \pm 6.0 (20) 18-123
10. Perianth length (mm) mean \pm SE (N) range	6.0 \pm 0.3 (13) 4.7-7.8	9.5 \pm 0.2 (30) 7.4-11.4	8.5 \pm 0.2 (10) 7.5-10.0	12.1 \pm 0.3 (10) 10.5-13.4
11. Style length (mm) mean \pm SE (N) range	4.3 \pm 0.2 (13) 3.3-6.9	7.1 \pm 0.1 (30) 5.9-8.5	7.4 \pm 0.2 (10) 6.2-8.6	8.2 \pm 0.3 (10) 7.2-9.5
12. Anther length (mm) mean \pm SE (N) range	2.4 \pm 0.1 (13) 1.8-3.2	3.7 \pm 0.1 (30) 2.8-4.7	3.3 \pm 0.0 (10) 2.8-3.7	5.0 \pm 0.2 (10) 4.3-5.7
13. Filament length (mm) mean \pm SE (N) range	0.6 \pm 0.1 (13) 0.2-1.1	0.9 \pm 0.1 (30) 0.5-1.5	0.1 \pm 0.2 (10) 0.0-0.7	3.1 \pm 0.1 (10) 0.1-0.9
14. Height above ovary to filaments (mm) mean \pm SE (N) range	1.1 \pm 0.0 (13) 0.6-1.6	1.6 \pm 0.0 (30) 0.9-2.3	2.6 \pm 0.1 (10) 2.0-4.3	3.7 \pm 0.2 (10) 2.7-4.7
15. Perianth lobe length (mm) mean \pm SE (N) range	4.4 \pm 0.2 (13) 3.1-5.7	7.5 \pm 0.1 (30) 5.8-8.9	5.0 \pm 0.1 (10) 4.0-5.9	7.9 \pm 0.2 (10) 6.6-9.0
16. Lobe basal width (mm) mean \pm SE (N) range	1.7 \pm 0.0 (13) 1.4-2.1	1.9 \pm 0.0 (30) 1.6-2.2	1.8 \pm 0.0 (10) 1.4-2.2	2.8 \pm 0.2 (10) 2.1-3.2

*Characters 1-9 were measured on the following specimens at PERTH (SE = standard error, N = sample size):

C. wonganensis—Chadwick, Y. 399; Coveny, R. 7808; George, A. S. s.n.; Hopper, S. D. 427, 1108.

C. teretiuscula—Beard, J. S. 1640; Blackall, W. E. 3613, 4423; George, A. S. 7842; Hartley, G. 13941; Hopper, S. D. 441, 442, 443, 628, 638, 639, 641, 643, 644, 645, 647, 653; Morrison, s.n.; Salisbury, s.n.

C. dielsii—Ashby, A. M. 3279; Diels, L. B122, s.n.; Hopper, S. D. 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440.

C. caricina—Blackall, W. E. s.n.; Canning, E. 3732; Cranfield, R. s.n.; Fairall, A. 316; George, A. 14338; Green, J. W. 486, 489, 587; Hopper, S. D. 370, 371, 372, 373, 888, s.n.; Koch, M. 1698; Paust, S. 1002; Roster, S. 328; Royce, R. 3834, 4316; Scrymgeour, E. 2083.

Characters 10-16 were measured on fresh flowers preserved in F.A.A. from the following localities:

C. wonganensis—Wongan Hills, voucher S. D. Hopper 427 (PERTH); *C. teretiuscula*—Mimegarra, voucher S. D. Hopper (PERTH); *C. dielsii*—W of Arrino, voucher S. D. Hopper 436 (PERTH); *C. caricina*—Parkerville, voucher S. D. Hopper 373 (PERTH).

There is no information yet available on the reproductive biology of *C. wonganensis*, other than its flowering period which extends from late July to early September. Further work in this area, particularly in relation to fire responses, may facilitate successful management of the species on the Nature Reserve at Wongan Hills.

Acknowledgements

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References

- Green, J. W. (1961). The genus *Conostylis* R. Br. II. Taxonomy. Proc. Linn. Soc. N.S.W. 85: 334-373.
- Kenneally K. F. (Co-ordinator) (1977). 'The Natural History of the Wongan Hills.' Handbook No. 11 (W.A. Naturalists' Club: Perth.)
- Rye, B. L. (1980). Wongan Hills species. Rare and Geographically Restricted Plants of Western Australia. 4. West. Aust. Dept Fish. Wildl. Unpublished Rept.

